gaps in which no ranging pulses were found, and broadcasting said identity so found from said central unit; and

(g) if ranging pulses are found in more than said predetermined correct number of gaps of said authentication interval, broadcasting a "collision" status message on said control channel.

REMARKS

Claims 93 and 94 have been objected to because of informalities. In response thereto, claims 93 and 94 have been amended along the lines the Examiner suggested.

Claims 86, 92, 94 and 96 are rejected for indefiniteness under 35 USC 112, para. 2. In response to these rejections, the claims have been amended to remove the indefiniteness.

In addition, claim 96 was voluntarily amended to conform it to the teachings of Figure 45 with regard to the remote units listening for messages on the control channel. Also, the term barker code was removed as a description of what the remote units transmit during the ranging interval and ranging pulse was substituted. This is because not all embodiments transmit barker codes. Any ranging transmission that can be detected in the presence of noise can be used, and the term ranging pulse is intented to cover all these. Claim 96 was also amended to add a step defining how the central unit listens on the control channel and broadcasts status signals thereon in response to what it finds or does not find in the gaps and to add a step defining what the remote unit does when it hears an empty status signal on the control channel after transmitting a ranging pulse (it changes the transmit timing delay, transmits another ranging pulse and listens again on the control channel).

New claim 97 was added to depend from claim 96 and add the steps in the process to resolve contentions in case of a collision of ranging pulses from two different remote units.

New claim 98 is the combination of claims 96 and 97 with all the steps involving actions by the central unit removed. Essentially, it is the process of Figure 45.

New claim 99 is the combination of claims 96 and 97 with all the steps performed by the remote unit removed.

OBVIOUSNESSREJECTION

Claims 84 and 87 have been rejected as obvious over the Gerakoulis patent, US 5,838,669. In response to this rejection, claim 84 has been amended as follows:

> iteratively transmitting a ranging signal that has correlation properties such that it can be found in the presence of noise, and conducting a trial and error adjustment of a transmit frame timing delay value prior to each transmission of said ranging signal until receiving a message from said headend transceiver that a ranging signal has been found in a gap surrounding a reference time <u>in an upstream payload data channel</u>, said gap being an interval during upstream transmissions <u>on said upstream payload data channel</u> from said plurality of distributed remote transceivers to said headend transceiver when transmissions of anything other than ranging signals by said remote transceivers is not permitted;

The difference of this claim over the prior art is that the upstream ranging signals are transmitted to the headend on the upstream payload data channel and not on some special access channel that wastes upstream bandwidth as is done in the cited prior art patent (5,838,669). Specifically, the prior art patent recites at Col. 6, lines 14 - 23:

> The initial signal, represented by line 404, is an asynchronous pilot signals comprising a PN sequence of code chips (g.sub.i)which is transmitted from the satellite (line 402) and received by the S&PRU of the ground station (line401). This is followed by a SYNC channel signal and paging channel. **The ground station acquires the SYNC channel, line 405, and the paging channel, line 406, which provides the pilot phase offset for the beam i(.DELTA.i). Successful reception of a packet from the ground station over the access channel, line 407, by the ACRU of the satellite permits a determination of a propagation delay difference, .DELTA.T.sub.ik, of the k ground station in beam i.** This delay value .DELTA.T.sub.ki, shown graphically in the FIG. 12 is transmitted by the paging channel, line 408, from the satellite to the ground station to achieve a coarse synchronization, between

> ground station and satellite. The code chips in the next uplink beam, line 409, from ground station to satellite are advanced or retarded by the TCTU, as shown in the FIG. 12 as needed to achieve this coarse synchronization, by adjustment of chip generator starting times. This change is returned to the ground station by paging channel 410.

The language in bold indicates that the upstream ranging signal in the prior art system is sent on an access channel. As can be seen from Figure 4 of the prior art reference, the access channel 407 is not the traffic channel which we are referring to as the upstream payload channel. Therefore, upstream bandwidth is wasted on an access channel which can be saved by simply using gaps in the upstream payload channel as is done in the claimed invention. Further, the downstream signals in the prior art from the headend (satellite) to the ground stations are not sent on the downstream payload channel but on three separate channels called the pilot channel, the sync channel and the paging channel. These three downstream channels 404, 405 and 406 are in addition to the downstream traffic channel 412 and waste bandwidth in the downstream direction.

In addition, the prior art differs from the claimed invention of claim 84 in that the adjustment message from the headend to the ground station telling the ground station by how much to adjust its transmit delay to achieve coarse synchronization is sent on a separate paging channel 408 in the prior art. In constrast, claim 84 has been amended to specify that the adjustment message sent from the headend to the cable modem is sent on the downstream payload data channel. Therefore, there is no downstream wasted bandwidth in using a separate paging channel in the claimed invention.

Similar amendments have been made to claim 87 to specify that the messages from the central transceiver to the remote transceivers regarding ranging are transmitted on the downstream payload channel and that the ranging signals are transmitted on the upstream payload channels and the timing is adjusted so as to get the ranging signals to arrive in a gap in the upstream payload channel. Thus, no bandwidth is wasted on channels that are not needed in the embodiments of Claims 84 and 87.

Where a combination of prior art references does not teach all the elements that are needed to make the claimed invention, it is not fair to say that the combination of references renders the claimed combination obvious.

Respectfully submitted,

PATENT

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